5.1 Land Use

Impacts on land use are considered in terms of commitment of land for a proposed use to the exclusion of other possible uses. Land occupied by LLBGs or other disposal facilities is considered to be permanently committed to the designated use.

In Alternative Groups A, B, C, D, and E, all LLW, MLLW, ILAW, and melters would be disposed of onsite. TRU waste would be shipped to WIPP for disposal. In the No Action Alternative, a substantial amount of the waste would remain in storage because of the lack of appropriate treatment capabilities to permit disposal.

Except for offsite commercial treatment of some MLLW, treatment, storage, and disposal activities associated with Alternative Groups A through E and the No Action Alternative would occur within or between the 200 East and 200 West Areas. The 200 Areas occupy about 16 km^2 (6 mi^2) on the Central Plateau. This area falls under the Industrial-Exclusive designation as defined in the *Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement* (HCP EIS) (DOE 1999). In addition, materials for capping the LLBGs at closure would be obtained from borrow pits in Area C located south of State Route 240 (SR 240) outside of, but adjacent to, the Fitzner/Eberhardt Arid Lands Ecology Reserve (ALE). The ALE boundary as adjusted in the HCP EIS is included within the Hanford Reach National Monument. Area C consists of about 926 ha (2287 ac) and was previously designated for Conservation (Mining) in the ROD for the HCP EIS (64 FR 61615). Excavation would occur over up to about 86 ha (210 ac) to provide capping materials for closure of the HSW disposal sites.

In Alternative Group A, use of land in the LLBGs for disposal of LLW and MLLW in trenches of deeper/wider design would range from 12 ha (30 ac) for the Hanford Only waste volume to 21 ha (52 ac) for the Upper Bound waste volume estimate. This use would be in addition to the 130 ha (321 ac) of land within the LLBGs already occupied by LLW and MLLW (and some retrievably stored TRU waste that would be removed). This additional land use would amount to increases of about 9 to 16 percent. Melters would be disposed of in a 6-ha (15-ac) single expandable lined trench near the PUREX Plant. ILAW would be disposed of near the PUREX Plant in a newly constructed facility occupying about 26 ha (62 ac). The total amount of land permanently used for disposal would range from 168 ha (410 ac) for the Hanford Only waste volume to 178 ha (440 ac) for the Upper Bound waste volume. No new support facilities would be built. However, from 69 to 73 ha (170 to 180 ac) would be temporarily used for excavation of capping materials.

In Alternative Group B, use of land in the LLBGs for disposal of LLW and MLLW in trenches of conventional design would range from 30 ha (74 ac) for the Hanford Only waste volume to 54 ha (130 ac) for the Upper Bound waste volume. This use would be in addition to the 130 ha (321 ac) of land within the LLBGs already occupied by LLW and MLLW (and some retrievably stored TRU waste that would be removed). This additional land use would amount to an increase of about 23 to 41 percent, respectively. ILAW would be disposed of in a newly constructed facility occupying about 26 ha (62 ac) in the CWC expansion area. The total amount of land permanently used for disposal would range from 187 to 210 ha (460 to 520 ac) for the Hanford Only waste volume to the Upper Bound waste volume. A new facility for

processing waste would be built and would occupy about 4 ha. From 77 to 86 ha (190 to 210 ac) would be temporarily used for excavation of capping materials.

In Alternative Group C, use of land in the LLBGs for disposal of LLW and MLLW in single expandable trenches by waste type would range from 12 ha (30 ac) for the Hanford Only waste volume to 21 ha (52 ac) for the Upper Bound waste volume (essentially the same as for Alternative Group A). ILAW would be disposed of in a single expandable trench occupying about 8 ha (20 ac) near the PUREX Plant. The total amount of land permanently used for disposal would range from 151 to 160 ha (370 to 400 ac) for the Hanford Only waste volume to the Upper Bound waste volume. No new treatment facilities would be built. However, from 62 to 66 ha (150 to 160 ac) would be temporarily used for excavation of capping materials.

In Alternative Group D_1, there would be no use of land in the LLBGs for disposal of LLW and MLLW. LLW, MLLW, ILAW, and melters would be disposed of in a lined modular facility to be built near the PUREX Plant. This facility would occupy from 19 ha (47 ac) for the Hanford Only waste volume to 25 ha (62 ac) for the Upper Bound waste volume estimate. The total amount of land permanently used for disposal would range from 150 to 155 ha (370 to 380 ac) for the Hanford Only waste volume to the Upper Bound waste volume. No new treatment facilities would be built. However, from 62 to 64 ha (150 to 160 ac) would be temporarily used for excavation of capping materials.

In Alternative Group D_2, LLW, MLLW, ILAW, and melters would be disposed of in a lined modular facility to be built near the PUREX Plant in the 200 East Area. The amount of land used would be the same as for Alternative Group D_1. However, the location of the land would differ from that of Alternative Group D_1.

In Alternative Group D_3, LLW, MLLW, ILAW, and melters would be disposed of in a lined modular facility to be built at the ERDF. The amount of land used would be the same as that for Alternative Group D_1, but land located in a different place would be used.

In Alternative Group E_1, LLW and MLLW would be disposed of in a lined modular facility to be built in a 200 East Area LLBG. This facility would increase land use in the 200 East Area LLBGs ranging from 5 to 11 ha (12 to 27 ac) for the Hanford Only waste volume to the Upper Bound waste volume. This would represent an increase of from 4 to 8 percent. ILAW and melters would be disposed of in a lined modular facility at the ERDF and would occupy about 14 ha (35 ac). The total amount of land used would be the same as that for Alternative Group D_1.

In Alternative Group E_2, LLW and MLLW would be disposed of in a lined modular facility to be built near the PUREX Plant and would occupy the same amount of land as in Alternative Group E_1. ILAW and melters would be disposed of in a lined modular facility to be built at the ERDF. The size of the latter facility also would be the same as that in Alternative Group E_1.

In Alternative Group E_3, LLW and MLLW would be disposed of in a lined modular facility to be built at the ERDF and would occupy the same amount of land as in Alternative Group E_1. ILAW and

melters would be disposed of in a lined modular facility to be built near the PUREX Plant. The size of the latter facility also would be the same as that in Alternative Group E_1.

In the No Action Alternative, LLW that had been certified for disposal would continue to be disposed of in trenches of current design. MLLW would be disposed of until trenches 31 and 34 in 218-W-5 are full and would thereafter be stored along with LLW that could not be certified for disposal in the CWC. ILAW would be disposed of in vaults occupying about 10 ha (25 ac) near the PUREX Plant. The increase in permanent land use would range from 27 to 29 ha (67 to 72 ac) for the Hanford Only waste volume and the Lower Bound waste volume (the Upper Bound waste volume would not be considered in this alternative), an increase of about 20 percent over the 130 ha (320 ac) currently occupied. In addition, about 66 ha (163 ac) would be used for storage of wastes for which treatment for disposal would not be available.

Details of land use (including new construction) associated with the HSW EIS alternatives are provided in Table 5.1 for disposal sites and in Table 5.2 for support facilities.

At most, a total of about 210 ha (440 ac), or 4 percent, of the 5000 ha (13,000 ac) of land designated as Industrial-Exclusive in the ROD for the HCP EIS (64 FR 61615) would be permanently committed to disposal of LLW, MLLW, ILAW, and melters within the scope of activities evaluated in this EIS.

Table 5.1. Land Use – Areas Used for Disposal, ha[a]

Low Level Burial Ground (LLBG) or Other Disposal Facility	Area Previously Designated for Disposal of HSW	Area Currently Occupied	Alternative Group A LLW & MLLW (Deeper/Wider Trench Design); Melter Trench and ILAW near PUREX			Alternative Group B LLW & MLLW (Conventional Trench Design); Melter Trench in 200 East Area; ILAW in 200 West Area (near CWC)			Alternative Group C Single Expandable Trenches, LLW in 200 West Area; MLLW in 200 East Area; Melter Trench and ILAW near PUREX			Alternative Group D_1 Lined Modular Facility near PUREX			Alternative Group D_2 Lined Modular Facility in 200 East LLBGs		
			Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume
Disposal – Low Level Burial Grounds (LLBGs)																	
218-W-3A[b]	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4
218-W-3AE	20	12.2	12.2	12.2	12.2	20	20	20	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
218-W-4B[b]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
218-W-4C[b]	20	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
218-W-5	37.2	26	29.4	30.4	35	33	35	37.2	29.4	30.4	35	26	26	26	26	26	26
218-W-5 Exp.[c]	202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
218-W-6	16	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0
200 West Area Subtotal	319.1	66.8	70.2	71.2	75.8	81.6	83.6	92.8	70.2	71.2	75.8	66.8	66.8	66.8	66.8	66.8	66.8
218-E-10	36.1	22.7	22.7	22.7	22.7	22.7	23.2	25.6	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
218-E-12B[b,d]	70.1	41	43.6	43.6	47.4	56.3	56.3	65.7	43.6	43.6	47.4	41	41	41	60.0	60.6	65.5
200 East Area Subtotal	106.2	63.7	66.3	66.3	70.1	79	79.5	91.3	66.3	66.3	70.1	63.7	63.7	63.7	82.7	83.3	88.2
LLBG Subtotal	425.3	130.5	136.5	137.5	145.9	160.6	163.1	184.1	136.5	137.5	145.9	130.5	130.5	130.5	149.7	150.2	155
Increase in LLBG Land Use			**6.0**	**7.0**	**15.4**	**30.1**	**32.6**	**53.6**	**6.0**	**7.0**	**15.4**	**0**	**0**	**0**	**19.2**	**19.7**	**24.5**

(a) To obtain areas in acres, multiply hectares (ha) by 2.47. Actual assignment of disposal areas to a particular LLBG would depend on operational efficiency.
(b) Area contains some retrievably stored TRU waste.
(c) 218-W-5 Exp. is a contingency expansion of the 218-W-5 Burial Ground for operational flexibility.
(d) Trench 94 in 218-E-12B consisting of about 7.4 ha (18 ac) is for disposal of decommissioned U.S. Naval reactor compartments and is included in the area designated. A like area is also included for future expansion of reactor compartment disposal (a total of 20.4 ha). The disposal of these reactor compartments was addressed in other NEPA documents (Navy 1984, 1996).

Table 5.1. (contd)

Low Level Burial Ground (LLBG) or Other Disposal Facility	Area Previously Designated for Disposal of HSW	Area Currently Occupied	Alternative Group A LLW & MLLW (Deeper/Wider Trench Design); Melter Trench and ILAW near PUREX			Alternative Group B LLW & MLLW (Conventional Trench Design); Melter Trench in 200 East Area; ILAW in 200 West Area (near CWC)			Alternative Group C Single Expandable Trenches, LLW in 200 West Area; MLLW in 200 East Area; Melter Trench and ILAW near PUREX			Alternative Group D_1 Lined Modular Facility near PUREX			Alternative Group D_2 Lined Modular Facility in 200 East LLBGs		
			Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume
Disposal – Other Areas																	
At ERDF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Near PUREX	41	0	32	32	32	0	0	0	14	14	14	19.2	19.7	24.5	0	0	0
CWC Expansion	30	0	0	0	0	26	26	26	0	0	0	0	0	0	0	0	0
Total Area Used for HSW Disposal		130.5	168.5	169.5	177.9	186.6	189.1	210.1	150.5	151.5	159.9	149.7	150.2	155	149.5	150.1	155.0
Total Increase in Land Use			**38.0**	**39.0**	**47.4**	**56.1**	**58.6**	**79.6**	**20.0**	**21.0**	**29.4**	**19.2**	**19.7**	**24.5**	**19.2**	**19.7**	**24.5**

Table 5.1. (contd)

Low Level Burial Ground (LLBG) or Other Disposal Facility	Area Previously Designated for Disposal of HSW	Area Currently Occupied	Alternative Group D_3 Lined Modular Facility at ERDF			Alternative Group E_1 Lined Modular Facilities LLW & MLLW in 200 East Area LLBGs, ILAW & Melters at ERDF			Alternative Group E_2 Lined Modular Facilities LLW & MLLW near PUREX, ILAW & Melters at ERDF			Alternative Group E_3 Lined Modular Facilities LLW&MLLW at ERDF, ILAW & Melters near PUREX			No Action Alternative. Non-Disposable Waste Stored in CWC; Melters Stored on Concrete Pads at CWC	
			Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume
Low Level Burial Grounds (LLBGs)																
218-W-3A[(b)]	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4
218-W-3AE	20	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	20	20
218-W-4B[(b)]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
218-W-4C[(b)]	20	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
218-W-5	37.2	26	26	26	26	26	26	26	26	26	26	26	26	26	30.8	32.2
218-W-5 Exp.[(c)]	202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
218-W-6	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200 West Area Subtotal	319.1	66.8	66.8	66.8	66.8	66.8	66.8	66.8	66.8	66.8	66.8	66.8	66.8	66.8	79.4	80.8
218-E-10	36.1	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	23.2	23.2
218-E-12B[(b,d)]	70.1	41	41	41	41	46.2	46.7	51.5	41	41	41	41	41	41	45	45
200 East Area Subtotal	106.2	63.7	63.7	63.7	63.7	68.9	69.4	74.2	63.7	63.7	63.7	63.7	63.7	63.7	68.2	68.2
LLBG Subtotal	425.3	130.5	130.5	130.5	130.5	135.7	136.2	141	130.5	130.5	130.5	130.5	130.5	130.5	147.6	149
Increase in LLBG Land Use			**0**	**0**	**0**	**5.2**	**5.7**	**10.5**	**0**	**0**	**0**	**0**	**0**	**0**	**17.1**	**18.5**

(b) Area contains some retrievably stored TRU waste.
(c) 218-W-5 Exp. is a contingency expansion of the 218-W-5 Burial Ground for operational flexibility.
(d) Trench 94 in 218-E-12B consisting of about 7.4 ha (18 ac) is for disposal of decommissioned U.S. Naval reactor compartments and is included in the area designated. A like area is also included for future expansion of reactor compartment disposal (a total of 20.4 ha). Disposal of these reactor compartments was addressed in other NEPA documents (Navy 1984, 1996).

Table 5.1. (contd)

Low Level Burial Ground (LLBG) or Other Disposal Facility	Area Previously Designated for Disposal of HSW	Area Currently Occupied	Alternative Group D_3 Lined Modular Facility at ERDF			Alternative Group E_1 Lined Modular Facilities LLW & MLLW in 200 East Area LLBGs, ILAW & Melters at ERDF			Alternative Group E_2 Lined Modular Facilities LLW & MLLW near PUREX, ILAW & Melters at ERDF			Alternative Group E_3 Lined Modular Facilities LLW&MLLW at ERDF, ILAW & Melters near PUREX			No Action Alternative Non-Disposable Waste Stored in CWC; Melters Stored on Concrete Pads at CWC	
			Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume
Other Disposal Areas																
At ERDF	0	0	19.2	19.7	24.5	14	14	14	14	14	14	5.0	5.6	10.5	0	0
Near PUREX	41	0	0	0	0	0	0	0	5.0	5.6	10.5	14	14	14	10	10
CWC Expansion	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Area Used for HSW Disposal			149.7	150.2	155	149.7	150.2	155	149.5	150.1	155	149.5	150.1	155	157.6	159
Total Increase in Land Used			**19.2**	**19.7**	**24.5**	**19.2**	**19.7**	**24.5**	**19.2**	**19.2**	**24.5**	**19.2**	**19.7**	**24.5**	**27.1**	**28.5**

Table 5.2. Land Use - Areas of HSW Treatment and Storage Facilities, ha[a]

Facility	Area Previously Designated for HSW Support Facility	Area Currently Occupied	Alternative Group A[b] LLW &MLLW (Deeper/Wider Trench Design); Melter Trench and ILAW near PUREX			Alternative Group B LLW &MLLW (Conventional Trench Design); Melter Trench in 200 East Area; ILAW in 200 West Area (near CWC)			Alternative Group C Single Expandable Trenches, LLW in 200 West Area; MLLW in 200 East Area; Melter Trench and ILAW near PUREX			Alternative Groups D&E Lined Modular Facilities			No Action Alternative[c] Non-Disposable Waste Stored in CWC; Melters Stored on Concrete Pads at CWC	
			Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume	Upper Bound Volume	Hanford Only Volume	Lower Bound Volume
CWC	86	50	50	50	50	50	50	50	50	50	50	50	50	50	86	86
CWC Expansion Area	30	0	0	0	0	0	0	0	0	0	0	0	0	0	23	30
WRAP	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
NWPF[d]	0	0	0	0	0	4	4	4	0	0	0	0	0	0	0	0
T Plant Complex	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
ETF[e]	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
LERF[f]	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Area C (Borrow Pit)	926	3	69.2	69.7	73.1	76.7	77.7	86.3	61.8	62.3	65.7	61.5	61.7	63.7	13.6	13.6
Total for Facilities	**1119**	**130**	**196**	**197**	**200**	**208**	**209**	**217**	**189**	**189**	**193**	**189**	**189**	**191**	**200**	**207**

(a) To obtain areas in acres, multiply hectares (ha) by 2.47.
(b) Treatment and Storage Facility requirements would be the same for the following as for Alternative Group A (capping resource area same as for Alternative Group D_1):
Alternative Group D_1: Disposal in a lined modular facility near PUREX Plant
Alternative Group D_2: Disposal in a lined modular facility in 200 East Area LLBGs
Alternative Group D_3: Disposal in a lined modular facility at ERDF
Alternative Group E_1: Disposal in lined modular facilities: LLW and MLLW in 200 East Area LLBGs, ILAW and melters at ERDF
Alternative Group E_2: Disposal in lined modular facilities: LLW and MLLW near PUREX, ILAW and melters at ERDF
Alternative Group E_3: Disposal in lined modular facilities: LLW and MLLW at ERDF, ILAW and melters near PUREX
(c) Storage of waste in CWC in the No Action Alternative would continue after 2046.
(d) NWPF = New Waste Processing Facility
(e) ETF = 200 Area Effluent Treatment Facility
(f) LERF = Liquid Effluent Retention Facility